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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/431,593	11/01/1999	YOSHINORI UEDA	2271/60617	8935

7590

07/15/2003

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EXAMINER

WARREN, MATTHEW E

ART UNIT

PAPER NUMBER

2815

DATE MAILED: 07/15/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/431,593

Applicant(s)

UEDA, YOSHINORI

Examiner

Matthew E. Warren

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 June 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) 9 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

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DETAILED ACTION

This Office Action is in response to the RCE and Preliminary Amendment filed on June 16, 2003.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-3, 5, 7, and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Groover, III et al. (US 4,804,636).

Groover, III et al. shows (fig. 9a – 9e) a semiconductor device comprising a Si substrate and a resistance pattern (moat) formed on the substrate. The pattern comprises a plurality first resistance patterns (poly-si) that include silicide (TiSi_2) on the substrate at a first level and a second resistance pattern of silicide (TiSi_2 on the source/drain or moat) provided adjacent the first resistance pattern at a second level (in the substrate) lower than the first level. The first resistance patterns are arranged in parallel with each other with mutual separation (see figure. 8). The second resistance

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pattern is connected in series to the first resistance pattern through a TiN local interconnect and has an edge defined by the first resistance pattern (moat is doped by a self aligning process-col. 20, lines 55-56) . The resistance pattern comprises an interlayer insulation pattern (gate oxide) under the first resistance pattern and the second resistance pattern is lower than the insulating layer. The first resistance pattern includes a polysilicon pattern and a polycide region (TiSi_2). The device further comprises a MOS transistor having a polysilicon gate that is identical in composition to the polysilicon pattern. The second resistance pattern is formed in the substrate in the form of a silicide region (TiSi_2) defined by the first resistance pattern (moat is doped by a self aligning process-col. 20, lines 55-56) .

Claims 1-3, 5-8 are rejected under 35 U.S.C. 102(e) as being anticipated by Naem (US 5,911,114).

Naem discloses (fig. 1E and col. 2, line 50 – col. 3, line 12) a semiconductor device comprising a Si substrate and a resistance pattern formed on the substrate. The pattern comprises a plurality of first resistance patterns (on substrate and Field OXide region) having silicide (14) on the substrate at a first level and a second resistance pattern (source/drain) having silicide (14) provided adjacent the first resistance pattern at a second level (in the substrate) lower than the first level. The second resistance pattern is electrically connected in series to the first resistance pattern through a TiN local interconnect to form the resistance element (col. 3, lines 17-18) and has an edge defined by the first resistance pattern (edge of FOX region) . The resistance pattern

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comprises an interlayer insulation pattern (gate dielectric) under the first resistance pattern and the second resistance pattern is lower than the insulating layer. The first resistance pattern includes a polysilicon pattern and a polycide region. The device further comprises a MOS transistor having a polysilicon gate that is identical in composition to the polysilicon pattern. The second resistance pattern is formed in the substrate in the form of a salicide region defined by the first resistance pattern. The substrate includes an impurity element with a concentration level such that a parasitic MOS transistor is formed of the first resistance pattern acting as a gate electrode and a pair of second resistance patterns at both lateral sides of the first pattern and acting as source-drain regions (the device is a MOS transistor col. 2, lines 50-56). Because the device is a MOS transistor, the threshold voltage is large than a supply voltage used in the device. The pattern includes a second polysilicon pattern and polycide (14) and having an impurity concentration level larger than the concentration of the first pattern due to the doping provided by the polycide process (col. 3, lines 1-7).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Naem (US 5,911,114).

Naem shows all of the elements of the claims except the first resistance pattern and the second resistance pattern having identical resistance. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a first and second resistance pattern having identical resistance values, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide first and second resistance patterns having identical resistance values to form a device having a desired total resistance.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew E. Warren whose telephone number is (703) 305-0760. The examiner can normally be reached on Mon-Thurs, and alternating Fri, 9:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Lee can be reached on (703) 308-1690. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-3432 for regular communications and (703) 308-7722 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

MEW

MEW
July 9, 2003



EDDIE LEE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800